

REPORT DOCUMENTATION PAGE**Form Approved**
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Washington Headquarters Service, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington, DC 20503.

PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.

1. REPORT DATE (DD-MM-YYYY) 02/15/2013		2. REPORT TYPE Technical Report		3. DATES COVERED (From - To) 1/1/2013 – 1/31/2012	
4. TITLE AND SUBTITLE ENGAGE: A Game Based Learning and Problem Solving Framework				5a. CONTRACT NUMBER N/A	
				5b. GRANT NUMBER FA8750-11-2-0102	
				5c. PROGRAM ELEMENT NUMBER N/A	
6. AUTHOR(S) Zoran Popović				5d. PROJECT NUMBER N/A	
				5e. TASK NUMBER 1	
				5f. WORK UNIT NUMBER N/A	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) University of Washington, Office of Sponsored Programs 4333 Brooklyn Ave NE Seattle WA 98195				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) Office of Naval Research One Liberty Center 875 North Randolph St. Arlington, VA 22203-1995				10. SPONSOR/MONITOR'S ACRONYM(S) ONR	
				11. SPONSORING/MONITORING AGENCY REPORT NUMBER	
12. DISTRIBUTION AVAILABILITY STATEMENT Approved for public release; distribution is unlimited.					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT SAR	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON Zoran Popović
a. REPORT Unclassified	b. ABSTRACT Unclassified	c. THIS PAGE Unclassified			19b. TELEPHONE NUMBER (Include area code) (206) 616-2660

Zoran Popović
ENGAGE: A Game Based Learning and Problem Solving
Framework (Task 1 Month 11)
Progress, Status and Management Report
Monthly Progress Report

Period Covered by the Report
January 1 through January 31, 2012

Date of Report: February 15, 2013

Project Title:
Contract Number: Grant FA8750-11-2-0102
Total Dollar Value:
Program Manager:

Submitted by:

Zoran Popović
185 Stevens Way AC101
Seattle, WA 98195

Telephone: (206) 616-2660
Fax: (206) 543-2969
Email: zoran@cs.washington.edu

Technical Information

1. Technical Progress / Highlights - Observations

As we gear up for larger studies we have begun to focus on improving the security and scalability of our server-side infrastructure. We have identified several areas of improvement in the infrastructure that we are going to focus on in order to support the wide-ranging deployments we're planning on this year:

- Automatic scaling of logging and authentication servers and logging throttling. Throttling will allow for minimum levels to be set for different versions of the game. This will allow games conducting research to keep all data and games on sites with a large volume of players.
- Framework for handling adaptive versions of games, which tie into teacher portal assignments.
- Integration with schools' authentication systems, including Fronter, Its Learning and systems that use LDAP authentication.
- Moving performance calculations for teacher portal to the server. Right now, the portal downloads all game logging data for all users; with a sufficient amount of users and play data, this becomes impractical. Instead, performance data will be calculated and cached on a nightly basis.

We are also working on finalizing the “homeplay” system, a system by which teachers using the Teacher Control Panel can assign specific levels or specific concepts to students. This will add the ability to define assignments by selecting core concepts and a number of levels.

The Community Manager, Kate Fisher, has started and we are beginning to see the benefits of increased community engagement. We are currently hiring a dedicated software tester in order to ensure that our games are robustly tested when they are deployed at scale.

2. Results or Problems and Solutions

We are currently analyzing the data from the most recent classroom trials at UCDS and will have results to share soon.

We have continued to improve the games based on both analysis of data from online play and direct observation of students in the classroom as they interact with the software. In Treefrog Treasure, we found that for some players, the shading of the “pies” causes visual ambiguity. The filled area was dark gray, but dark gray was sometimes read as indicating the lack of something as opposed to something that was filled in. Therefore, a pie with two lighter wedges and one dark wedge could be interpreted as both $1/3$ and $2/3$. We have made adjustments to the way pie charts are represented in response to this feedback. Treefrog Treasure also now shows an animation when players get the numberline wrong, displaying counting along the numberline.

In DragonBox, we worked to make the rules of the game as implicit as possible. For example, we now attempt to “explain” that the dragon needs to be alone by showing an animation of the dragon scared of elements on its side of the equation (looking specifically at the terms that cause it to stay inside). This is used in the beginning levels when the player is having trouble knowing that they have to isolate the box.

3. Significant Accomplishments Anticipated During Next Reporting Period

We will have results from the UCDS study and the beginning of the analysis of behavioral and affect data. We will have a more robust teacher tool that will allow us to perform larger-scale trials.

4. Publications relevant to this effort

No new research papers were published in the January 1 – 31st timeframe.

5. Meetings and Events (Please include meetings with subcontractors)

- N/A

6. Changes to the Contract Organization

As we have been discussing in previous reports and other communication, the UTA subcontract has been replaced by internal UW hiring and with external consultants from Stanford University. Amendment to contract was finalized and signed on January 31, 2013. Contracting with Stanford consultants is now confirmed.